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THE DAIREE DATE, A PROMISING MESOPOTAMIAN VARIETY FOR TESTING IN THE SOUTHWEST

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INTRODUCTION

One of the unidentified date varieties imported from Mesopotamia in 1913 has for several years been attracting some attention in the date-growing regions of the southwestern part of the United States because of the size, color, and quality of its fruit. Attempts to identify this variety led to several tentative but not very definite determinations. Some specialists thought that it might be the little-known Hevezi or Hawaiz variety; others called it the famous Awaidi,[1] which is probably the rarest and largest of the Mesopotamian dates. As there were only a few of the original palms, and these proved to be different from any on the inventory, it appears that they were probably mixed accidentally or otherwise in the original shipment. This is rendered more likely by its final identification as a variety commonly grown around Basra, whence many date offshoots had been exported to the United States.

In 1927 Walter T. Swingle, of the Bureau of Plant Industry, United States Department of Agriculture, sent samples of fruit from the Coachella Valley of California to the American consul at Baghdad. This fruit was shown to a number of date growers in the Basra district. Although there was some difference of opinion among them, the verdict of the majority indicated that it might be the Dairee variety.

Prior to the departure of the writer for Mesopotamia in the summer of 1928 he was directed to endeavor to identify this particular variety in that country. With that in view, notes were made on the botanical characters of the palms in the Coachella Valley, and a carefully preserved sample of the fruit was taken along for comparison. Early in September an investigation was made in the Basra region, and after a study of both palms and fruit the writer was able to determine definitely the identity of this date as the Dairee.

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[1] The identification as Awaidi was made plausible by some resemblance of this date to a Mesopotamian date sold chiefly in Chicago under the trade name Awaidi (or Hwadi), but a study of the latter showed that they were usually not true Awaidi dates nor were they the variety under study, but apparently a mixture of several other sorts.

PREVIOUS DESCRIPTIONS

The Dairee is a well-known variety in southern Iraq and in adjacent portions of Persia. It was described by Popenoe [2] as follows:

> *Dairí,* said to mean "Of the world", i.e., "grown everywhere", but it is possible that it means the Monastery [3] Date, referring to the famous Daír al Balah (Monastery of Dates) at Gaza (Ghazzeh) in Palestine, where the Egyptian Hayání, called Birket al Hajjí in America, is much grown. If so, the Busreh Dairí would be Hayání (Birket al Hajjí). It is one of the commonest "soft and dry" dates of Busreh, but of inferior quality. It is sometimes packed in skins as a soft date. The offshoots come into bearing at an early age, but the yield is always rather light. Not eaten in the fresh stage. Ripens about October first.
>
> Form oblong to oblong-ovate, widest near center, whence it narrows slightly to the broad and obliquely flattened base, and more pronouncedly to the broadly pointed apex. Size large, 1½ to 1⅞ inches long, ¾ to 1 inch broad. Surface almost smooth, translucent brownish red to light maroon in color, overspread with a thin, gray-blue bloom. Skin thick, tough, adhering closely except for occasional longitudinal or transverse folds; wrinkling almost none. Flesh firm, tender, one-quarter inch thick, translucent, deep amber colored. Seed oblong, blunt at base, slightly pointed at apex; 1 inch long, three eighths wide; smooth, light brown, ventral channel broadly open, germ pore two-thirds of distance from base to apex. Flavor sweet but lacking in character and with unpleasant after-taste.
>
> When allowed to become dry, the date is similar to the above, save that the flesh around the base becomes whitish, opaque, granular and dry, sometimes extending in a layer around the seed cavity, almost to the apex of the fruit.

The variety was later described by Dowson [4] as follows:

> General
>
> Dairi palms, also called Maishi and Taib Al 'Ism, constitute about four percent of the palm population of the Shatt Al 'Arab. They are to be found all along the Tigris and the lower Euphrates. The dates are eaten only in the *tamar* [5] stage, and are to be found dry in 'Iraqi markets at all seasons, like Badraian; Ashrasi and Zahidi. There is no overseas export, though some go to Arabia. Date merchants always mention Dairi dates as those which first are attacked by weevils when stored in shops and warehouses. The hard character of the fruit makes it especially suitable to be taken on a journey in the pocket, handkerchief, or saddle-bag. Date syrup, or *dibis,* made from Dairi is not known, dates of this variety being too dry to yield it. The average weight of *tamar* dates yielded by thirty-six palms in Shatt Al 'Arab date gardens in 1919 was 32 pounds. The palms appear to be able to resist the ill effects of drought better than those of other varieties, with the possible exception of Ista'amran. At Nasiriyah (25/8/18) Dairi *tamar* were being sold in the market at 15 Rs. a *man* of 152 pounds, and in the gardens for 12 Rs. At Amarah (28/12/19) dry Dairi could be bought in the market at 20 Rs. per Amarah *man* of 112 pounds, and the pressed dates in baskets at half that sum.
>
> The Palm.
>
> Dairi palms are the most graceful of all; the trunks are slender, the fronds long and thin, and the scanty, long, and narrow leaflets hang delicately down. The bases of the fronds are small and green. The spines are medium in number and fewer than those of Ista'amran palms. The fruiting stalks are orange in colour, long, strap-like, and weak.
>
> The Fruit.
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> The proximal part of the date bunch is rather bare of fruit. This dry date is rather long, wider at the base than at the apex, and is similar in shape and size to

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[2] Popenoe, P. B. BABYLONIAN DATES FOR CALIFORNIA. Pomona Col. Jour. Econ. Bot. 3: 467. 1913.

[3] According to Lane (Arabic-English Lexicon, p. 931), the usual meaning of "dair" is "a convent or monastery of Christians", making the varietal name mean "of the (Christian) monastery." Another meaning given by Lane is a "cloister or cell of a monk." As there are Christian peoples living in Iraq, there would appear to be little warrant for seeking the origin of this variety in a particular monastery in Palestine as suggested by Popenoe.

[4] Dowson, V. H. W. DATES & DATE CULTIVATION OF THE 'IRAQ. PART III. THE VARIETIES OF DATE PALMS OF THE SHATT AL 'ARAB. Mesopotamia, Agr. Dir., Min. Int., Mem. 3: 38–40, illus. 1923.

[5] Arabs distinguish three stages in the ripening of dates—"khalal", "ratab", and "tamar", which, in the absence of English equivalents, have been used more or less by students of date culture. A date enters the khalal stage when it has about reached its maximum size and the green color of the growing period is replaced by the yellow or red shades characteristic of the variety at this time. The fruit is regarded as being in the ratab stage when the tip begins to soften and until the date has dried or cured down to a point where it can be stored without danger of souring. It is then in the tamar (fully ripe) stage.

the more famous HALAWI. The wrinkling of the skin is more marked at the apex than at the base. One lot of one hundred *khalal* weighed 48.0 ozs., and five lots of one hundred *tamar* averaged 35.0 ozs. The colour of the *khalal* is a deep chrome yellow, which changes to dull rose. The *ratab* are more brown, and the *tamar* become a dull, violet red or a brown purple. A heap of DAIRI *tamar* seen from a little distance has somewhat the colour of a bank of partly flowering heather. The *khalal* are astringent, though they are eaten occasionally, and the *ratab* also are not of good flavour; but the *tamar* are dry dates, not very sweet, and of pleasant taste. The skin is tough, and the stone large.

Popenoe refers to the Dairee as a "soft and dry" type. Dowson characterizes it as a dry date, yet he was evidently aware that some of the Dairee are handled as soft dates, for in the first paragraph of his description he refers to the dry Dairee bringing twice as much as the "pressed dates in baskets" on the same market. Pressed dates of course could refer only to soft fruit.

Under the name of "Hawazi" the Dairee is listed by Albert [6] as one of 13 varieties of dates being planted in commercial numbers in Arizona. It is described as follows:

> A soft date, about medium in size, which can be packed as a soft or semi-soft date. The fruit is oblong to oblong ovate, light brown in color, and of excellent quality. A number of offshoots, of this variety have been planted in Arizona but have not as yet produced fruit. Judging from its behavior in other sections, it should prove a very desirable variety for Arizona.

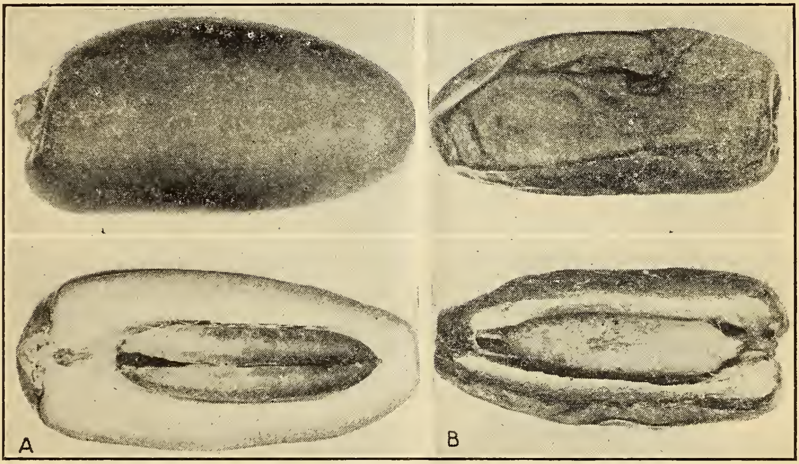

FIGURE 1.—Dairee dates grown in the Coachella Valley of California: *A*, Khalal or immature stage immediately preceding ripening; *B*, tamar or packing stage of maturity. (Natural size.)

GENERAL DESCRIPTION

FRUIT

The Dairee date is of a firm type which may be soft, dry, or intermediate in texture according to conditions of climate, culture, and handling. The size is large, ranging from 1½ to 2 inches in length and three fourths to 1 inch in diameter. The seed is 1 to 1¼ inches long with a width about one fourth to one third of the length. The shape is oblong to oblong-elliptical with a rounded apex (figs. 1 and 2). The color just before it matures is a dull shade of red over a yellow background. As it ripens it becomes a deeper brownish red. Soft specimens are characterized by a darker shade, sometimes almost black at the base. Dry specimens become a pale purplish brown. The skin folds rather than wrinkles with ripening and is rather tough, but the amber-colored flesh of the soft dates is of a firm, tender consistency. The flavor of the best soft dates is pleasant and agreeable with a suggestion of molasses; that of the drier dates is apt to be rather flat.

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[6] ALBERT, D. W. SUMMARY OF VOCATIONAL COURSE IN DATE CULTURE. Arizona State Department of Vocational Education, Phoenix. (Mimeographed.)

PALM

Dairee palms possess more beauty and grace than is common to most date varieties. The medium to slender trunk is crowned with foliage of a deep, somewhat glaucous green. The gentle curvature of the leaves increases near the tip. The leaflets are rather soft, drooping more or less along the lower portion of the midrib. The spine area is fairly long, which, with the rather widely separated groups of narrow basal leaflets, gives an open appearance to the center and an airy aspect to the whole crown (figs. 3 and 4). The fiber of the trunk is relatively light in color and coarsely netted, with a tendency to be drawn across the base of the leaves in solid bands 1 or 2 inches in width. The leaves are 12 to 13 feet long; leaflets range from 26 inches long to slightly less than half this at the tip, with a width varying from about two thirds of an inch on the lower and longer ones to 1⅓ inches on the widest ones, 2 or 3 feet from the tip. The spines are 4 to 6 inches long, rather slender but stiff, commonly 20 to 24 in number, and distributed over about one fourth of the blade length.

TECHNICAL DESCRIPTION

FRUIT

The following description of the fruit of the Dairee variety is taken from notes made by the writer near Basra, Iraq, September 12, 1928. These notes were carefully compared with fruit from palms in the Coachella Valley of California during the seasons of 1929 and 1930, and any variations or comments are noted, in each instance preceded by the letters C.V.

Color.—Khalal stage: Dragon's-blood red (R. XIII)[7] to nopal red (R. I), frequently not a solid color over all portions of the date, but diffused as a very minute stippling on a background of cadmium yellow (R. III).

C.V.—The characteristic red shades are "brushed" lengthwise at the base and diffused in the apical portion as a fine netting with some stippling over an orange-rufous (R. II) background. Some specimens are a deeper color—Brazil red (R. I), touched, especially toward the base, with a dull shade of carmine (R. I).

Tamar stage.—A first glance at the fully ripe fruit gives an impression of a darker base than apex. The apical portions are commonly around mahogany red (R. II). Toward the base, at least on one side, are Hessian brown (R. XIII), or the even deeper diamine brown (R. XIII) and burnt lake (R. XII). A light bloom gives a purplish effect in depressions where not rubbed off. As it cures on the palms at Basra a certain proportion of the fruit tends to have dry areas near the base, the color of which ranges around mikado brown (R. XXIX), said by Dowson to be characteristic of the variety. A specimen in about the condition to which the fruit would be cured in California has Sanford's brown (R. II) to mahogany red (R. II) in the apical portion, merging into maroon (R. I) at the base, with the area under the calyx dull Indian purple (R. XLIV).

C.V.—The soft fruit frequently becomes almost black at the base. A light bloom often gives this base a purplish cast—dark livid brown (R. XXXIX). Mikado brown (R. XXIX) occurs only occasionally in small areas on the dry

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[7] Color references are to the following authority: RIDGWAY, R. COLOR STANDARDS AND COLOR NOMENCLATURE. 43 p., illus. Washington, D.C., 1912. Plate numbers are indicated by roman numerals.

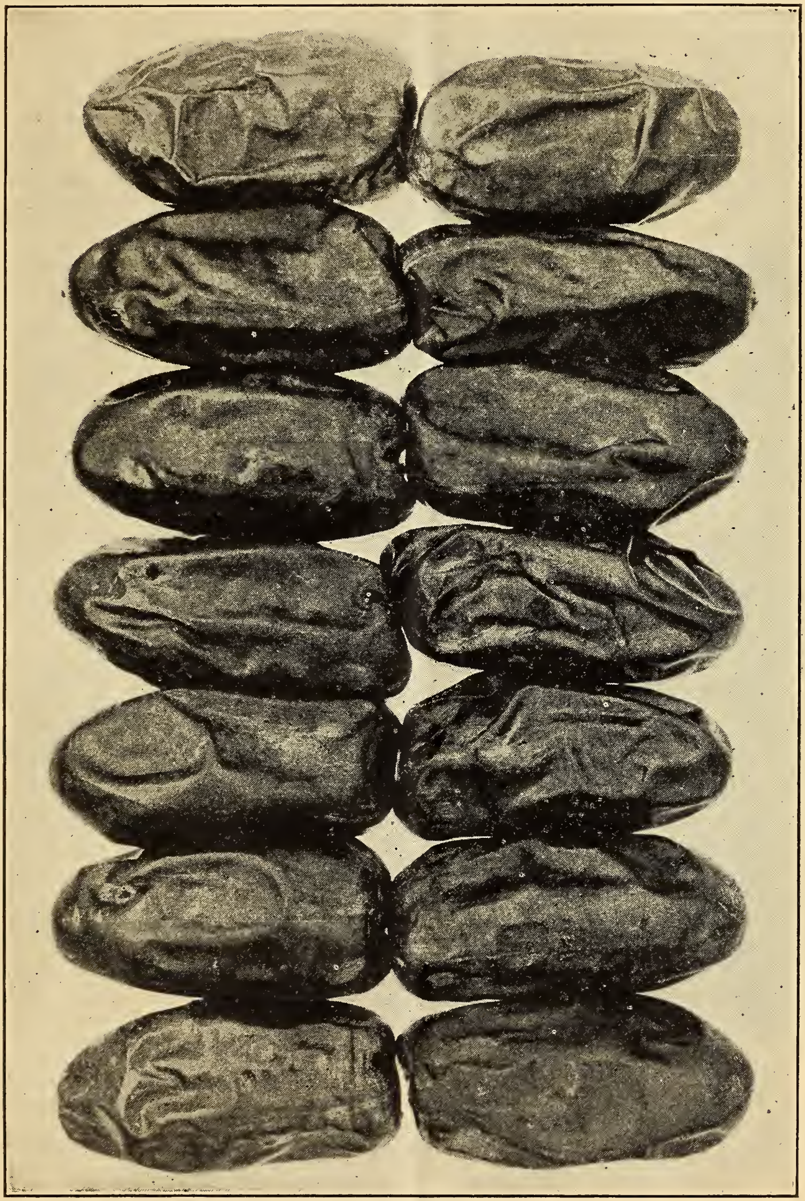

FIGURE 2.—Dairee dates from a commercial garden in the Coachella Valley of California. (Natural size.)

dates, of which Prussian red (R. XXVII) to deep purplish vinaceous (R. XLIV) is more characteristic.

Shape.—Oblong to oblong-elliptical with rounded apex. Perianth 10–11 mm in diameter and 3–4 mm high.

C.V.—An oblique base predominates. A prominent perianth is characteristic. (See fig. 1.)

Size.—Large; 36–45 mm long by half as wide.

C.V.—The fruit here will average a little larger; some dates are as long as 50 mm, though not many of those examined exceed 45 mm in length. Date growers of the Southwest increase the size of all varieties by thinning the fruit on the bunch.

Flesh.—In soft dates, amber, semitranslucent; 4–5 mm thick in midportion of date; good flavor, but rather on the "heavy" side of sweetness. In dry dates tends to become rather tough and hard, especially near the base, where it is whitish in color.

C.V.—Where grown successfully in moist soils there are few dry dates, almost all being soft or semisoft dates of good texture and flavor. There is a slight amount of white rag around the seed, but seldom enough to be objectionable.

Skin.—Tends to shrink and shrivel with the flesh rather than to separate and pucker—a desirable characteristic for curing and packing.

C.V.—The skin would be classed as tough, but not more so than Zaheedy, Ashrasy, and many other varieties. This characteristic is a commercial advantage, as it permits cleaning and handling by machinery that cannot be used for dates with tender skin. As a dry date, there is a slightly disagreeable flavor localized in the skin, but in soft ripe fruit handled at low temperatures, as is usual with the Deglet Noor variety, it is not noticeable.

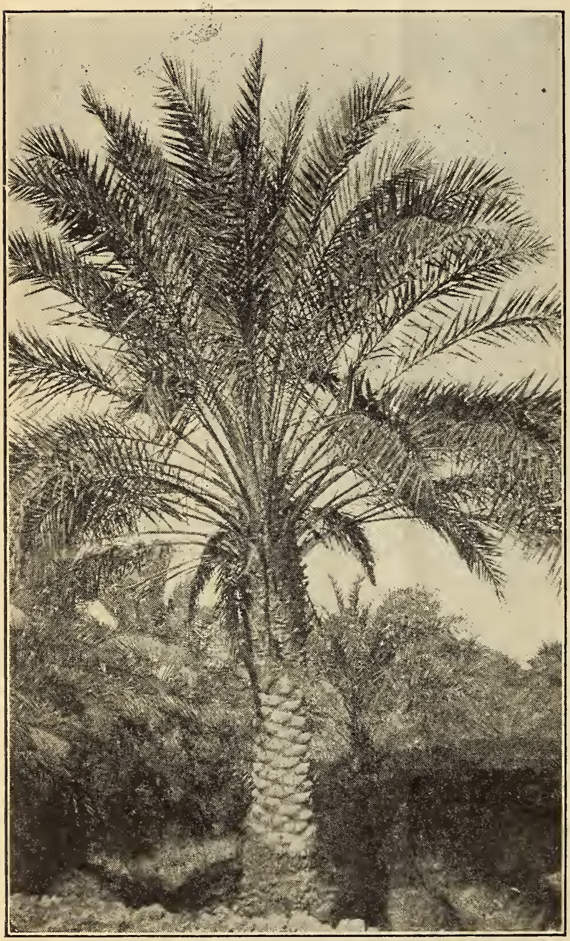

FIGURE 3.—A Dairee date palm near Basra, Iraq.

Time of ripening (C.V.).—The Dairee would be classed as a midseason variety.

SEED

Color.—Basal portion of seed avellaneous (R. XL), deepening to wood brown (R. XL) near apex on dorsal surface, darkening on the sides and mid portion of the ventral surface to mikado brown (R. XXIX) or even deeper, with sometimes a small margin of this shade around the germ pore.

C.V.—The description holds well, but in general the extreme dorsal base averages a little lighter, being around vinaceous-buff (R. XL).

Shape.—Oblong-elliptical; the dorsal surface nearly straight, the ventral rounded fairly regularly. The ventral furrow is closed in the center, where the surface is flattened, opening gradually toward the base and to a lesser extent near the apex, where it is frequently a narrow, rather abrupt cupped or lipped depression for 2–3 mm of length. The ventral surface of the seed is further characterized by a faint depression on each side of the furrow, appearing as a line parallel to it and extending from apex to base. A small, pointed projection extending about 1 mm, more prominent than the corresponding point of the seed of most other varieties, characterizes the apex. On the dorsal side near the base, opposite the ventral furrow, is a slight depression continuing about halfway up to the germ pore, then decreasing into a faint line, marked with brown near the germ pore.

C.V.—There seems to be a little more variation in the seed. The secondary lines on either side of the furrow seam can nearly always be traced, but in some instances the area between these lines is depressed, so that, though the seam is closed, the furrow might be regarded as being broad and shallow. It is common for the dorsal outline from base to apex to be somewhat concave. The apical projection is not always as prominent as was noted on the Basra specimens.

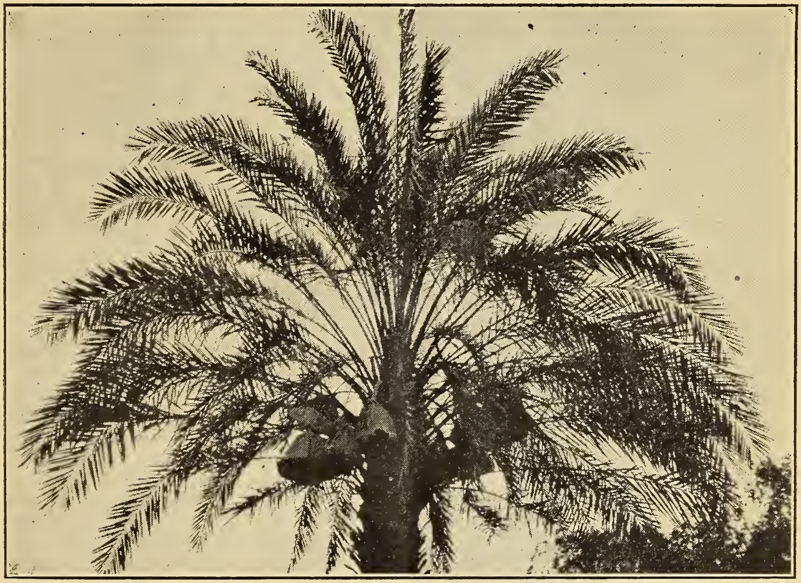

FIGURE 4.—A Dairee date palm in the Coachella Valley of California, showing characteristic outline of foliage. Fruit clusters are protected by waterproof paper covers.

Size.—28–31 by 8.5–10 mm.

C.V.—The breadth of most seeds examined ranged from 8.5 to 9 mm.

Germ pore.—A little nearer apex than base.

PALM

The following description of palms of the Dairee variety is based on notes from both Iraq and the Coachella Valley.

Distinguishing characters.—Color dark glaucous green; curvature of leaves increasing and becoming marked near apex; pinnae narrow, somewhat drooping in basal portion of blade; fibre coarse, with a tendency to be drawn tight in solid bands an inch or more wide across the base of the petiole; upper retrorse spines and lower retrorse pinnae "necked" for 1–3 cm.

Trunk.—Medium to slender.

Leaves.—Color dark green, somewhat glaucous, near dark cress green (R. XXXI).

Curvature moderate, increasing rapidly toward the apex. The angle of a tangent to the tip of a leaf, extended to where it intersects an imaginary prolongation of the lower part of the rachis in a straight line, is large, running 60–90°.

This is because of the more pronounced curvature of the tip of the leaf, which sometimes has a radius as small as 3–5 feet.

Base medium to narrow in width; rather flattened; color green, somewhat glaucous. Occasionally old leaves are slightly edged with blackish coloring, or a trace may appear in the middle, but not conspicuous nor continuous across.

Length, 360–380 cm.

Spine area, 25–30 percent of length.

Spines narrow, rather stiff. Except a few basal spinelets as short as 2 cm, they are 6–18 cm long, 20–24 in number. Retrorse spines near the pinnae are "necked" (ventral groove closed before reaching base) 1–3 cm, as are also the retrorse spike pinnae, but the groove line is traceable. The angle formed with the rachis is 20–50°, the antrorse forming the lesser angles, the retrorse the greater (fig. 5).

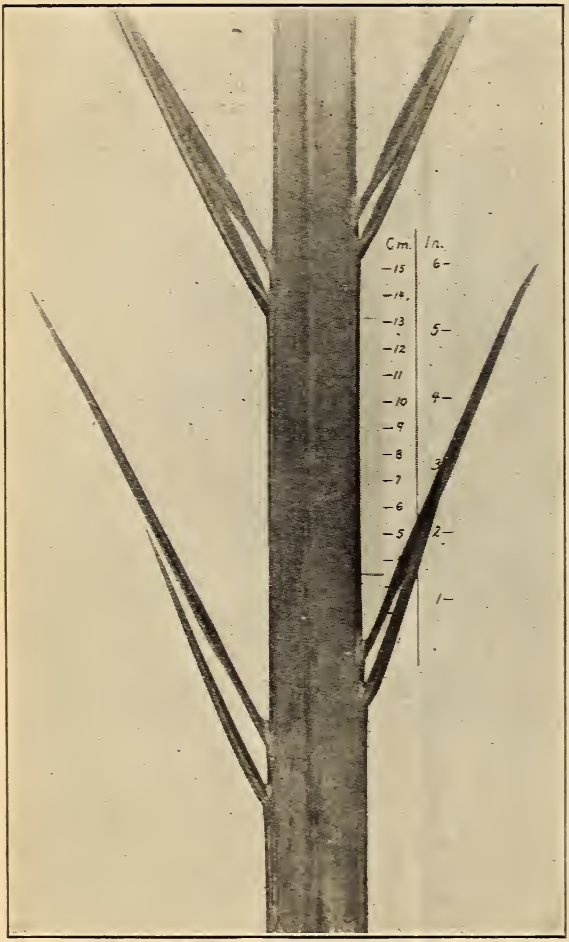

FIGURE 5.—Spines of the Dairee date palm. In the transition zone where spines pass into pinnae, the larger (retrorse) of each pair is "necked."

Pinnae. — Longest, 64–70 cm; widest, 3.2–3.7 cm. Terminal, 27–30 by 1.9–2.3 cm, the greatest diameter being a little above the middle. Texture relatively soft; basal pinnae somewhat drooping.

Grouping,[8] mostly in twos, few threes; fairly regular.

Valley angle: The opposite ranks of pinnae form a ventral angle of 55°–65° at the narrowest point, carrying fairly well along the blade, as the angle is only 70°–100° near the apex.

Dorsal angle: The retrorse pinnae are nearly in the blade plane or a little below, forming a dorsal valley of 180°–160°.

Rachis angle: Both antrorse and retrorse pinnae form angles of 35°–50° with the rachis in the lower portion of the blade.

Basal spacing index (the percentage of lineal space along the rachis occupied by the basal pinnae groups — those immediately above the spines), 15–30 percent. In other words, the groups in the lower portion of the blade are rather widely separated.

Divergence, apex: The opposite ranks of pinnae, 1 foot from the apex, measured from the dorsal surface (the one commonly seen on the palm by the observer), form angles 70°–85°.

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[8] References to groups follow the definitions outlined by MASON, S. C. BOTANICAL CHARACTERS OF THE LEAVES OF THE DATE PALM USED IN DISTINGUISHING CULTIVATED VARIETIES. U.S. Dept. Agr. Bul. 223: 9. 1915.

A group is two or more spines or pinnae whose points of attachment to the midrib are relatively close together and separated by a greater space from other pinnae or groups of pinnae. A group is regular when the lower spine or pinna is antrorse (with the fold directed obliquely upward) and the higher one is retrorse (with the fold directed back or downward), while in between there may or may not be one or more introrse (with the fold directed inward).

FRUIT STALKS

The fruit stalks are greenish yellow, medium to long. One near Basra a little longer than the average, but not the longest on the palm in question, measured 136 cm to the fruiting head (area from which the strands branch), 40 by 18 mm width and thickness in the center, 35 cm length of fruiting head, 52 cm longest strand, 23 cm shortest strand. The strands are straw-colored, and about 2 cm at the terminus is commonly bare of dates.

C.V.—Fruit stalks approximately the same size as those observed in Iraq. The number of strands ranges from 50 to 60. A few strands bear terminal flowers, but at least three fourths have no flowers nearer the tip than one fourth to 1 cm or more.

FLOWERS

The following description of the flowers is from notes by Silas C. Mason, formerly senior horticulturist, Division of Horticultural Crops and Diseases, Bureau of Plant Industry:

> The flowers are from 4 to 4½ or rarely 5 mm long, of about equal breadth, or sometimes broader than long, broadest at the base, and often cordate, rounded-triangular or sometimes concave-triangular, with thickened, carinate calyx angles. The calyx length is equal to that of the exposed corolla or slightly greater, one half or slightly more than one half of the entire flower length, the teeth small, the calyx margin entire or with slightly depressed sinuses. The carpels are exposed about one quarter to one third of their length, the stigmas unusually long and strongly recurved, the stigmatic grooves often prominent.

MERITS AND DRAWBACKS

QUALITY

The Dairee date is not rated highly either by Popenoe or by Dowson, and certainly the fruit commonly found on the market in Iraq is "of inferior quality." This is doubtless due in part to the conditions under which the palms are grown and the manner in which the fruit is handled. Dairee palms, like the Sayer variety, are commonly planted in the drier, more exposed locations. Furthermore, not being highly esteemed, they are apt to be more or less neglected as compared with varieties like Halawy, which are much in demand for export. This alone would favor the production of a large percentage of dry fruit, inferior to what the same variety would produce under more favorable conditions. The practice in Iraq of leaving all the fruit not intended for immediate consumption on the palm until it is not only ripe but has dried down sufficiently to permit packing without danger of souring, results in the bulk of the crop going into the dry class.

In the Southwest optimum cultural conditions, especially when combined with higher relative humidity during the ripening season, tend with a date like the Dairee to produce a much larger percentage of soft fruit than occurs with such a variety in Iraq. The soft fruit frequently differs much in appearance from the dry fruit of the same variety. In 1928, however, the writer found soft fruit on the palms in Iraq similar to that produced here, and conversely was able during the seasons of 1929 and 1930 to match dry samples secured from Basra through the courtesy of Mr. Dowson with fruit from Coachella Valley palms.

Ripe fruit of this variety that has been long exposed to dry air may develop some of the unpleasant aftertaste mentioned by Popenoe and which the writer has found to be localized in the skin, but it is not noticeable in fruit grown under optimum conditions, well cured, and properly stored. Incidentally, defective environment and handling may develop a bad taste in other varieties.

To produce the texture and appearance desired by a market that favors soft or semidry dates, the fruit is commonly picked in this country before it has dried sufficiently to be packed. Then it is dehydrated in packing houses where it is possible to control humidity and where dates can be cured for packing with as high moisture content as possible. Under these conditions attractive packs of high-quality fruit of the Dairee date have been produced repeatedly in the Coachella Valley. (See figs. 1 and 2.) Such fruit has no objectionable aftertaste. In fact, it is so superior to the Dairee commonly found on the market in Iraq that it might easily be taken for a different variety. The handling of the Dairee in this respect resembles that of the Deglet Noor now largely grown in the Coachella Valley.

Fortunately the Dairee produces an abundance of offshoots, commonly 15 to 20 to the palm. Although only a small number of palms were originally imported, it was estimated in 1933 that more than 500 offshoots would be available from commercial plantings in the near future, and only a very few of the palms planted in orchard form are as yet past the offshoot-bearing stage.

YIELD

The yield of the Dairee is reported by Popenoe as being "always rather light." Dowson [9] reports the average yield as 32 pounds per palm. This is, of course, a very low yield as judged by date-growing standards of the Southwest. However, it should be compared only with other varieties in Iraq, where all palms are planted about three times as closely as in this country and receive much less cultural attention. According to the same report, the Sayer and Halawy varieties produced only 37 and 36 pounds per palm, respectively, while the yield of Khadrawy was as low as 30 pounds per palm. These varieties also occur in commercial plantings in the Coachella Valley, where their yield has been much higher than in Iraq. While production records are insufficient as yet in the Coachella Valley, Dairee palms on good soil with ample irrigation have given satisfactory sets of fruit. Yields have been comparable with those of Sayer, Halawy, Khadrawy, and other Mesopotamian varieties grown side by side. In one instance in 1933 four palms 18 years old bore 12 to 15 bunches each, all heavily laden with fruit. The dates on one typical bunch were counted, classed, and weighed, and after allowance for loss of water in ripening of the plump (khalal) fruit the yield of fresh ripe dates was estimated to be 20.37 pounds, which would give a yield of 240 to 300 pounds per palm, a good yield for any date variety.

The reputation of the Dairee for low yields in Iraq may be more or less a consequence of its being commonly grown only on the poorer, more alkaline soils with insufficient irrigation. With the exception of the Sayer, no other variety in that country is so highly rated as to its ability to withstand drought and adverse soil conditions. and these two varieties are rarely planted in the better locations. In other words, the low rating often given to the Dairee in Iraq, like the low rating given also to the Sayer,[10] may be largely due not to any inferiority of the variety but rather to its being usually planted in unfavorable situations.

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[9] DOWSON, V. H. W. DATES AND DATE CULTIVATION OF THE 'IRAQ. PART II. THE RESULTS OF AN INVESTIGATION INTO THE YIELD OF DATE PALMS ON THE SHATT AL 'ARAB. Mesopotamia, Agr. Dir., Min. Int., Mem. 3: 21. 1921.

[10] The Sayer (Ista'amran) date, usually rated very low in Iraq, has shown signs of being entitled to a much better rating in the United States where it has been grown on good fertile soil with an abundance of water and fertilizer.

On the other hand, the early behavior of the Dairee is likely to be somewhat disappointing. The same palms in the Coachella Valley, which now produce the largest yields, are said to have had very poor sets of fruit prior to the removal of the offshoots. Similar observations have been made on other palms of this variety. It is well known that any variety does not produce as good fruit when the palms are very young as it does when they are older. This is partly due to the immaturity of the palms and partly to the conditions under which the dates mature. Such variability is likely to be especially pronounced in a semidry date like the Dairee. On young palms the fruit hangs low and near the ground and is frequently exposed to extremes that do not obtain later. The soil if dry may by reflection and radiation tend to produce dry, shriveled, or sunburned dates, whereas the close proximity of irrigation water and surface vegetation may result in humidity sufficiently high to produce souring and rotting on any variety.

REACTION TO HUMIDITY

In addition to its desirable size and shape, together with a firm skin which shrinks with the flesh and makes it better adapted to commercial handling than some soft dates of better quality, the Dairee is promising for many locations in the Southwest because of its reaction to moisture. It appears to be as little affected by rotting and souring as any of the varieties from Mesopotamia. In fact, there is some evidence that the best fruit is obtained during a season of high humidity, owing to its tendency to develop a larger proportion of dry and inferior dates in dry seasons.

The loss of fruit resulting from occasional rains and high humidity during the ripening season is one of the most serious drawbacks to date growing in the Southwest. Direct contact with water splits the skin of dates just before they begin to soften into the final stage of ripening. This results in total loss or pronounced deterioration in the fruit affected, according to the severity of the damage. Some varieties split more than others under such conditions. The Dairee appears to be intermediate in this respect.

Damage from direct contact with rain water is, however, commonly averted by protective coverings placed over the ripening fruit bunches. As a consequence the greatest loss comes indirectly from the rotting and souring fostered by prolonged periods of high humidity frequently accompanying rain. Against such loss coverings are of no avail. Nevertheless during humid weather the Dairee in the Coachella Valley has developed to optimum quality with a minimum of damage. This occurred during the very unfavorable season of 1931. Periods of extreme heat and of high humidity during the summer were followed by a rain early in September. No variety of date in the Coachella Valley escaped without some injury, indicating that resistance to rain and humidity is relative, and that while some dates usually exhibit less injury than others, any known variety will be more or less damaged under certain combinations of adverse conditions. Yet it was evident from a survey of the valley that the Dairee was one of the varieties that suffered least, and it was observed further that the fruit that matured this season was of better quality than in other years when the humidity was lower and conditions more favorable to most varieties.

This tendency of the Dairee variety to ripen a crop of excellent quality during humid weather constitutes its chief recommendation for further trial and will very likely result in its being cultivated on a commercial scale in some sections. Its resistance to injury from humidity may be of major importance in most of the date-growing sections of the United States and is important during exceptionally wet years even in the driest of the date regions, such as the Coachella Valley. Conversely, its failure to develop high quality when it ripens in very dry situations would operate to make its profitable culture very difficult or even impossible in extremely dry situations such as Death Valley. It should be given a thorough test in the heavy soils of the lower Colorado River Valley, where it is difficult to prevent the roots from having access to much soil moisture during the ripening season, and where at the same time there is often dew in the morning.

SUMMARY

A previously unidentified date variety, a few bearing palms of which occur in the Coachella Valley of California, has been found to be the Dairee, a variety common in southern Iraq and adjacent portions of Persia. It was probably accidentally included in one of the original importations. During the last few years offshoots have been planted to a limited extent in the Salt River Valley of Arizona and more recently in the lower Rio Grande Valley of Texas. In the Coachella Valley the Dairee develops into a better date than it does in its original home, with quality, size, and texture adapted to commercial handling. It has gone through periods of high humidity with very little rotting and souring. It appears promising for testing in other date regions and especially in the Colorado River Valley on heavy soils having ground water near the surface, where high humidity and frequent dews prevail during the ripening season.

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